Analytical precision will be determined through the use of matrix spikes and matrix spike duplicates for the analytical work performed. Table 4.3 describes the QA/QC precision for the Long Term Monitoring.

Table 4-3 Frequency of Field QC Sample Preparation

Sample Type	Field Duplicate	MS/MSD	Equipment Rinsate Blank
Surface Water	One Sample per Survey	Every 20th Sample	Every 10th Sample
Bedded Sediment	Every 10th Sample	Every 20th Sample	Every 10th Sample (silica sand blank)

4.4.2 Accuracy

Accuracy refers to the degree of difference between measured or calculated values and the accepted reference value. The closer the numerical value of the measurement comes to the reference value, or actual concentration, the more accurate the measurement. Analytical accuracy is expressed as the present recovery of an analyte which has been added to the environmental sample at a known concentration before analysis. For laboratory, accuracy will be determined from the results from the matrix spike analysis. Percent recovery will be determined and reported for all matrix spike samples (Table 4-3). The laboratory specific QAPP provides the equations and control limits to be used for accuracy determination.

4.4.3 Completeness

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. Following completion of field work and analytical testing, the percent completeness will be calculated by the following equation:

$$\text{Completeness (\%)} = \frac{\text{(number of accepted and approved values reported)} \times 100}{\text{(number of samples submitted for analysis for each parameter)}}$$

The acceptable range for completeness is 95% for all parameters.

Field Completeness Requirements

Field sampling conditions are often unpredictable and nonuniform. The objective of the field sampling program is to obtain samples for analyses required, to provide sufficient sample material to complete those analyses, and to produce samples to demonstrate QC for sampling procedures, where possible. The analysis of rinsate blanks and field duplicates, where possible, will provide the basis for determining acceptance of data.